

A YANG Data Model for Optical Network Inventory

CCAMP WG, IETF112

draft-yg3bp-ccamp-optical-inventory-yang-00

Authors:

[Chaode Yu \(yuchaode@huawei.com\)](mailto:yuchaode@huawei.com)

[Italo Busi \(Italo.Busi@huawei.com\)](mailto:Italo.Busi@huawei.com)

[Aihua Guo \(aihuaguo.ietf@gmail.com\)](mailto:aihuaguo.ietf@gmail.com)

[Sergio Belotti\(sergio.belotti@nokia.com\)](mailto:sergio.belotti@nokia.com)

[Jean-Francois Bouquier\(jeff.bouquier@vodafone.com\)](mailto:jeff.bouquier@vodafone.com)

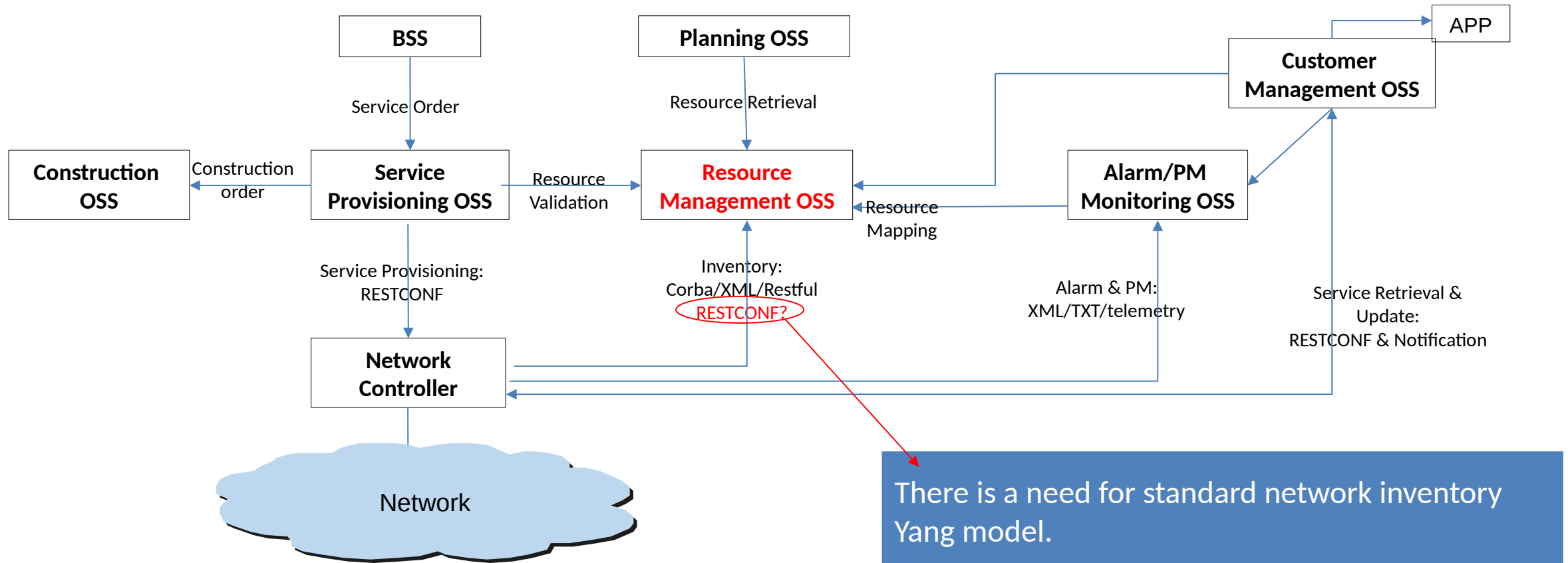
[Fabio Peruzzini\(fabio.peruzzini@telecomitalia.it\)](mailto:fabio.peruzzini@telecomitalia.it)

[Oscar Gonzalez de Dios\(oscar.gonzalezdedios@telefonica.com\)](mailto:oscar.gonzalezdedios@telefonica.com)

[Victor Lopez\(victor.lopez@nokia.com\)](mailto:victor.lopez@nokia.com)

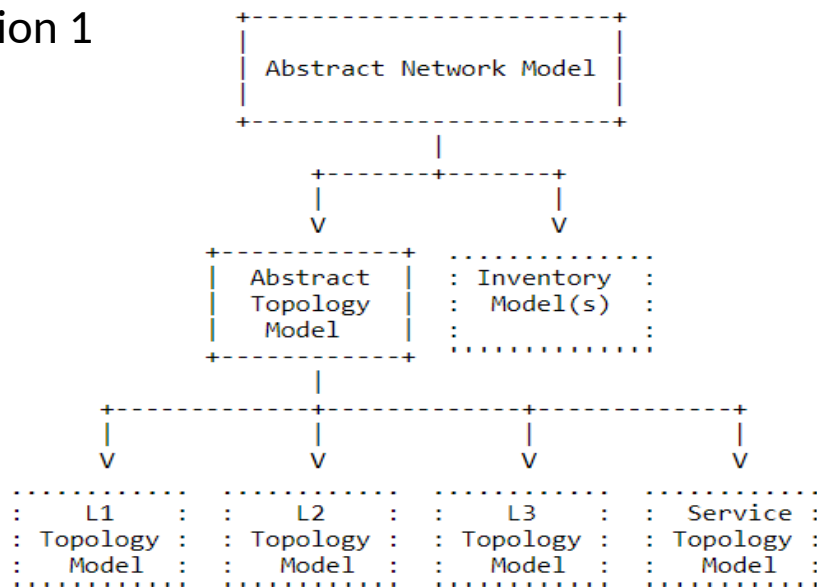
Why the model is needed?

- Motivations:
 - Inventory management is a key function in operators' resource management OSS system
 - Lacking standard Yang data model definition
 - Data model in RFC8348 is limited to a single server level, it covers full management of hardware
 - We intend to provide a generic and technology-agnostic data model, covering IP, optical and microwave



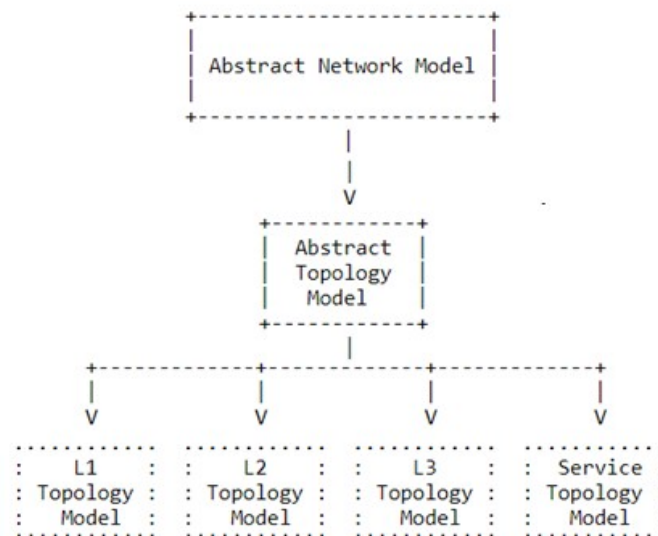
Model Relationship with RFC8345

Option 1



- The network inventory model could be augmentation of abstract network model according to RFC8345.
- Some applications only require network inventory information
- Multiple retrieval steps to get only inventory data with filtering
- There exist a big cluster of topology data under ietf-network and make the filtering time-consuming in large scale network

Option 2



Suggested

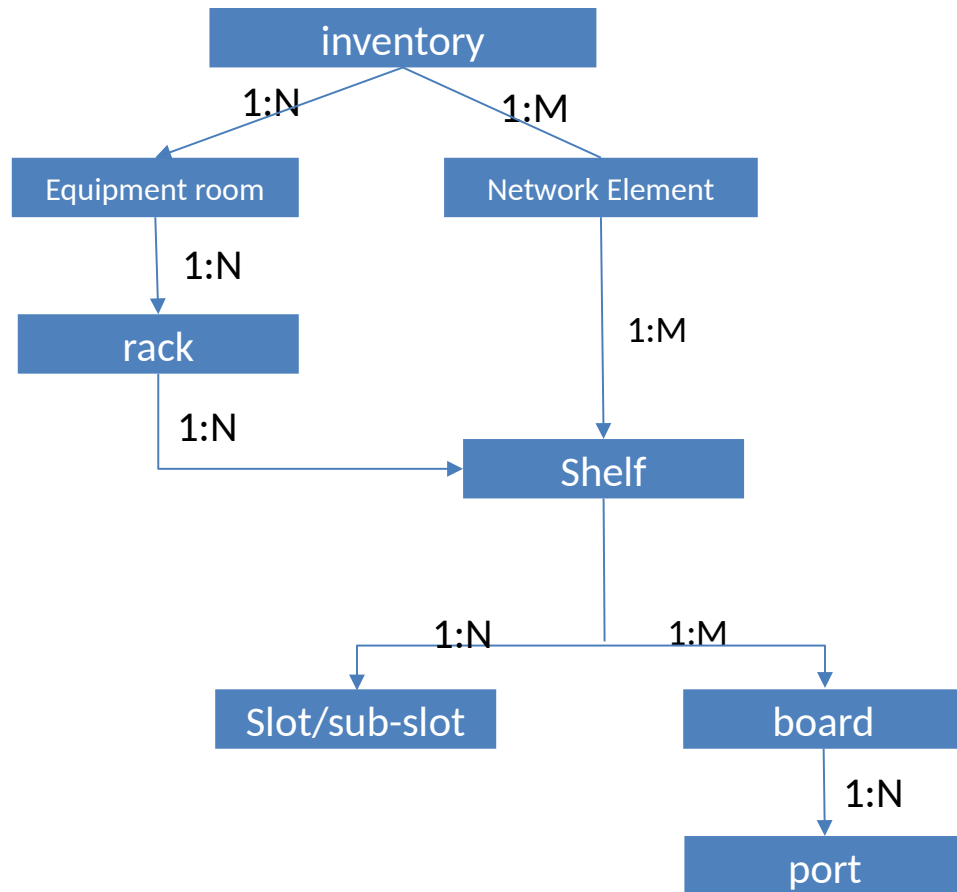
- The inventory model has a new root.
- Application can retrieve inventory data in single step without filtering

Reusing RFC8348

```
module: ietf-hardware
  +--rw hardware
    +--ro last-change?  yang:date-and-time
    +--rw component* [name]
      +--rw name          string
      +--rw class         identityref
      +--ro physical-index? int32 {entity-mib}?
      +--ro description?  string
      +--rw parent?       -> ../../component/name
      +--rw parent-rel-pos? int32
      +--ro contains-child* -> ../../component/name
      +--ro hardware-rev?  string
      +--ro firmware-rev? string
      +--ro software-rev? string
      +--ro serial-num?   string
      +--ro mfg-name?     string
      +--ro model-name?   string
      +--rw alias?        string
      +--rw asset-id?     string
      +--ro is-fru?       boolean
      +--ro mfg-date?     yang:date-and-time
```

- The proposed inventory model can use similar structure and common attributes as defined in RFC8348
- The proposed inventory model will focus on management and will not repeat all the configuration data of RFC8348
- Option to use schema mount is under investigation

Inventory Objects and Their Relationship



- A rack can be deployed with several NEs and a NE can also be installed on different racks. So they are independent objects. Same situation is also happened between slot and board.

What parameters are in scope?

```
module: ietf-network-inventory
+--ro network-inventory
+--ro equipment-rooms
+--ro equipment-room* [uuid]
+--ro uuid      yang:uuid
+--ro name?     string
+--ro location? string
+--ro rack* [uuid]
+--ro uuid      yang:uuid
+--ro name?     string
+--ro row-number? uint32
+--ro rack-number? uint32
+--ro shelves* [uuid]
+--ro uuid      yang:uuid
+--ro name?     string
+--ro shelf-number? uint8
+--ro chassis-ref
+--ro ne-ref?   leafref
+--ro component-ref? leafref
+--ro network-elements
+--ro network-element* [uuid]
+--ro uuid      yang:uuid
+--ro name?     string
+--ro components
+--ro component* [uuid]
+--ro uuid      yang:uuid
+--ro name?     string
+--ro description? string
+--ro class?    identityref
+--ro parent-rel-pos? int32
+--ro children* [child-ref]
| +--ro child-ref -> ../../../../uuid
+--ro parent
+--ro parent-ref? -> ../../../../uuid
```

A diagram with blue lines and arrows showing relationships between leafref parameters. It connects 'ne-ref?' and 'component-ref?' in the 'equipment-room' node to 'network-element' and 'component' nodes in the 'network-elements' node. A bracket on the right side groups 'Shelf', 'Slot', 'Sub-slot', 'Board', and 'port' as potential values for these leafrefs.

- We just define a simple network inventory model architecture in the first version of draft. The detail information for each inventory object will be discussed later.
- Most of the inventory objects are defined as components of network element according to the idea of RFC8348.
- To support the one NE installed on different racks scenario, the rack object is not define as a component of NE, but the shelves in it can be referred to shelf components in NE.

Status & Discussion

- This work defines the optical inventory model and received good support from ccamp experts, meanwhile it may be applicable to a wider scope, therefore we will also report the progress to other WGs, e.g. (netmod, opsawg)
- Should this model augments RFC8345 or defines a new root?
- Shall we consider schema mount?